

Amendments to the Claims:

Please amend Claims 2, 5, and 8-12 as follows:

1. (original) A system for monitoring a variable relating to a rotating member, the system comprising:

a source of optical energy for emitting optical energy;

at least one transducer mountable on the member and which transducer in use modulates optical energy received from the source in accordance with changes in the variable; and

an optical transmission system mountable between the source and the member for transmitting through free space optical energy between the member and the source.

2. (currently amended) A system as claimed in claim 1 wherein the optical source is mounted at a stationary station and comprises one of a broadband optical source and a frequency sweeping narrowband source, coupled to a first length of optical fiber fibre.

3. (original) A system as claimed in claim 2 wherein the optical transmission system comprises a first lens and a second lens, the first lens being mountable on the stationary platform in substantial alignment with the second lens which is mountable on the member.

4. (original) A system as claimed in claim 3 wherein the first lens and the second lens comprise a pair of graded-index lenses.

5. (currently amended) A system as claimed in claim 2 ~~any one of claims 2 to 4~~ wherein the transducer comprises a second length of optical fiber fibre and an optical energy modulating arrangement connected to the second length of optical fiber fibre.

6. (original) A system as claimed in claim 5 wherein the modulating arrangement comprises a first optical energy reflective element and a second optical energy reflective element.

7. (original) A system as claimed in claim 6 wherein the first and second elements comprise a first and a second Bragg grating having respective center frequencies which are spaced in wavelength.

8. (currently amended) A system as claimed in claim 6 ~~or claim 7~~ wherein the first and second elements are mounted on the member in spaced relationship relative to one another.

9. (currently amended) A system as claimed in claim 6 ~~or claim 7~~ wherein the first and second elements are mounted on the member in at least partially overlapping relationship with one another.

10. (currently amended) A system as claimed in claim 8 ~~or claim 9~~ wherein the first and second elements are mounted on the member at ninety degrees relative to one another.

11. (currently amended) A system as claimed in claim any one of claims 8 to 10 wherein each of the first element and the second element extends at an angle of forty-five degrees to a longitudinal axis of the rotating member.

12. (currently amended) A system as claimed in claim any one of claims 3 to 10 comprising means for separating optical energy emitted by the source and modulated energy propagating from the transducer.

13. (original) A system as claimed in claim 12 wherein said means comprises an optical circulator having a first port connected to the source, a second port connected to the first lens and an output.

14. (original) A system as claimed in claim 13 wherein the output of the circulator is connected to means sensitive to modulation of the optical energy.

15. (original) A method of monitoring a variable relating to a rotating member, the method comprising the steps of:

transmitting optical energy through free space towards the member;

on the member causing the energy to be modulated in accordance with the variable to be monitored;

transmitting from the member and via free space the modulated energy to a stationary station; and

analyzing said modulated energy at the stationary station.